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Invited Perspective: Most Affected by Climate Change; Least Studied

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Each country that is a signatory to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) produces a nationally determined contribution (NDC), outlining national plans for mitigating and adapting to climate change. The NDCs of low- and middle-income countries (LMICs) have greater coverage of the health risks of and responses to climate change, in terms of risks, adaptation, mitigation, co-benefits, and trade-offs, whereas higher-income countries tend to focus on energy, the economy, and related sectors (Dasandi et al. 2021). This difference reflects the expectation that the largest health risks of climate change will occur in LMICs, where rising ambient temperatures, changing precipitation patterns, and rising sea levels are increasingly affecting air, water, and food systems. Such changes will affect the geographic and seasonal patterns of major causes of morbidity and mortality—particularly undernutrition, diarrheal diseases, malaria, dengue, and injuries—and will disproportionately affect the most vulnerable population groups, such as the lowest-income families, older individuals, pregnant women, and neonates (Smith et al. 2014; Watts et al. 2015). The timeliness and effectiveness of adaptation and mitigation efforts will determine the extent of increase in risks with additional climate change (Ebi and Hess 2020). There is a critical need for more evidence on effective locally led adaptation and mitigation interventions.

Although substantial proportions of current and future climate-related adverse health outcomes are preventable, research and implementation funding are well below what is needed to minimize morbidity and mortality (Ebi et al. 2016; Green et al. 2017), with very little published research evidence from LMICs. Using machine learning, a comprehensive global mapping of English-language research published 1 January 2013–9 April 2020 predicted there were nearly 16,000 studies on climate and health (Berrang-Ford et al. 2021). Overall, 79% of studies that identified place names focused on high- and upper middle–income nations, particularly China. The numbers of publications from high-income countries were two times greater than from lower middle–income countries and close to 10 times those from low-income nations. For example, focusing just on the impact of high ambient temperatures on health, a review of epidemiological studies in LMICs from January 1980 to August 2018 identified 146 studies, of which 82 were conducted in China, 9 in other countries of East Asia and the Pacific, 12 in South Asia, 10 in sub-Saharan Africa, 9 in the Middle East and North Africa, and 7 each in Latin America and Europe (Green et al. 2019). More than 92% reported positive associations, noting that older people, women, and individuals within low socioeconomic brackets were the most vulnerable. Developing efficient and effective heat action plans is urgently needed yet requires more robust evidence.

Burrows et al. (2021) contributes to the meager evidence of the extent to which climate change is affecting the mental well-being of populations in LMICs. In this study, individuals displaced by landslides were more likely than those not displaced to self-report improvements in several aspects of mental well-being. Although not providing the final word, the research importantly adds to our understanding of the complex nature, duration, and extent to which landslides and other climate- and weather-related events affect health and well-being in these communities, directly and indirectly. More, and more rigorous, research is needed to create a deeper understanding of the challenges and opportunities to effectively plan for a world with more landslides with additional climate change.

The broad research agenda in climate change and health includes quantifying the burden of climate-sensitive health outcomes, and projecting risks at spatial and temporal scales useful for decision-making, under a range of climate and development scenarios. Research needs to be conducted in the context of other drivers of climate-sensitive health outcomes, such as population growth and aging, urbanization, and socioeconomic change. Climate change can also disrupt provision of and access to health care, with consequences for human health. Locally relevant adaptation and mitigation interventions, especially protecting the most vulnerable, need to be developed and evaluated. Research is needed to inform developing, implementing, and evaluating strategies, policies, and programs to proactively prepare for and manage health risks that will evolve with climate change and development. The health co-benefits of mitigation policies and technologies also need to be quantified.

The UNFCCC recognizes climate change as a problem with common but differentiated responsibilities; everyone is responsible for climate change (United Nations 1992). Because the impacts are inequitably distributed across communities and countries, high-income countries agreed to lead on providing resources to support adaptation and mitigation. Funding increases for climate change and health research from Wellcome Trust, Horizon Europe, the U.S. National Institutes of Health, and others should develop and strengthen research capacity in LMICs and build it through South–South and South–North partnerships, knowledge exchanges, and research implementation. The need is urgent because climate change is already damaging health and well-being, with greater impacts on vulnerable populations in LMICs who have contributed the least to the largest challenge of this century.

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